

OPIC
OFFICE DE LA PROPRIÉTÉ
INTELLECTUELLE DU CANADA



CIPO
CANADIAN INTELLECTUAL
PROPERTY OFFICE

Ottawa Hull K1A 0C9

(21) (A1)	2,146,673
(22)	1995/04/10
(43)	1996/10/11

(51) Int.Cl. ⁶ A61M 1/00

(19) (CA) APPLICATION FOR CANADIAN PATENT (12)

(54) Apparatus for Draining and Flushing Suction Bottles

(72) Walker, Kenneth G. - Canada ;

(71) Same as inventor

(57) 3 Claims

Best Available Copy

Notice: This application is as filed and may therefore contain an incomplete specification.



Industrie Canada Industry Canada

Canada

2146673

Abstract: During surgery and other medical procedures, suctioned blood and body fluids are collected in graduated vessels commonly called suction bottles or suction canisters. The function of this invention is to drain and flush reusable suction bottles/canisters of their contents while the suction bottles/canisters remain in a closed state. This eliminates worker exposure to bloodborne pathogens during the disposal of blood and body fluids from suction bottles/canisters

2146673

The embodiments of the invention in which an exclusive property or privilege is claimed are as follows:

1 A self-contained apparatus for draining and flushing suction bottles/canisters comprising a housing, closable compartment, electric pump, water line, drainage line, detergent and connective hoses and tubes.

2 An apparatus defined in claim 1 which utilizes the lid ports of suction bottles/canisters for the introduction of flushing and draining tubing, thus executing its functions while the suction bottles/canisters remained closed.

3 An apparatus defined in claim 1 which executes its functions within the definition of an "engineering control."²

¹
a claim 2

²Ibid.

2146673

Specification: This invention relates to a self-contained apparatus for draining and flushing suction bottles/canisters.

The disposal of blood and body fluids from suction bottles has been extremely problematic. To date, the common method is for a worker to remove the lid from a suction bottle and manually pour the liquid contents down a sink. This method of disposal leaves the worker vulnerable to exposure to a variety of bloodborne pathogens, including Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and Hepatitis C Virus (HCV).

This exposure risk to the worker may be eliminated by draining and flushing the suction bottle/canister while it remains in a closed state. I have found that by pumping the contents of a suction bottle/canister out through its lid ports, and by flushing water and detergent into the suction bottle/canister, also through its lid ports, that the suction bottle/canister can remain closed from the time it is first used during a surgical procedure until after it has been decontaminated. In this way, any potential biohazard is kept in containment.

This invention will, moreover, conform to the requirements of an "engineering control" as defined in the United States by the *Bloodborne Pathogens Standard*, which states that

engineering controls act on the source of the hazard and eliminate or reduce employee exposure without reliance on the employee to take self-protective action. Once implemented, engineering controls protect the employee permanently, subject only, in some cases, to periodic replacement or preventive maintenance.¹

In drawings which illustrate the embodiment of the invention, Figure 1 is a front internal view of the embodiment, and Figure 2 is a front external view of the embodiment.

The apparatus illustrated comprises a structural housing (1) containing a compartment (2) into which descends an output (draining) connector tubing (3), and an input (flushing) connector tubing (4). The operator of the apparatus places the suction bottle/canister (5) in the compartment (2) and inserts or connects an output adapter (6) through or on to a port (7) on the suction bottle lid (8), and connects the output adapter (6) to the output connector tubing. The operator then performs the same procedure for the input, inserting or connecting an input adapter (9) through or on to a port (7) on the suction bottle lid (8). After both output and input connections are made, the operator closes and secures the compartment door (10). The suction bottle/canister (5) is now ready to be drained and flushed. Draining begins when the operator switches on the electric pump (11), creating a negative pressure in the output line (12). This causes the contents of the suction bottle/canister (5) to be drawn into the output adapter (6), through the output connector tubing (3), through the output line (12), and into a sewage drain (13). When the suction bottle/canister (5) is drained, the operator leaves the electric pump (11) running and opens the input flow control valve (14). This could be a common tap, or a more sophisticated type

¹United States Department of Labor/Occupation Safety and Health Administration, "Bloodborne Pathogens: Final Rule." *Federal Register*, 1991

2146673

of regulator. Opening the flow control valve (14) allows pressurized water to flow through the water line (15). The positive pressure created by flowing water causes germicidal detergent to be drawn from its drum (16), through the detergent connector hose (17), and into the water line (15). This mixture of water and detergent flows through the input connector tubing (4), through the input adapter (9), and in to the suction bottle/canister (5). The flushing sequence may be repeated as many times as necessary. When flushing is complete, the input flow control valve (14) is closed. Once the remaining water and detergent are drained from the suction bottle/canister (5), the electric pump (11) is switched off. The operator may then open the compartment door (10), disconnect the output/input connector tubings (3 and 4) from the output/input adapters (6 and 9) and remove the suction bottle/canister (5) from the compartment (2). The suction bottle/canister (5) can then be sent for processing and sterilizing. Service doors (18) allow access to the interior of the apparatus and for replacement of germicidal detergent (in manufacture's drum). The switch for the electric pump (19), and the input flow control valve (14), could be integrated with electronic controls, further automating the apparatus.

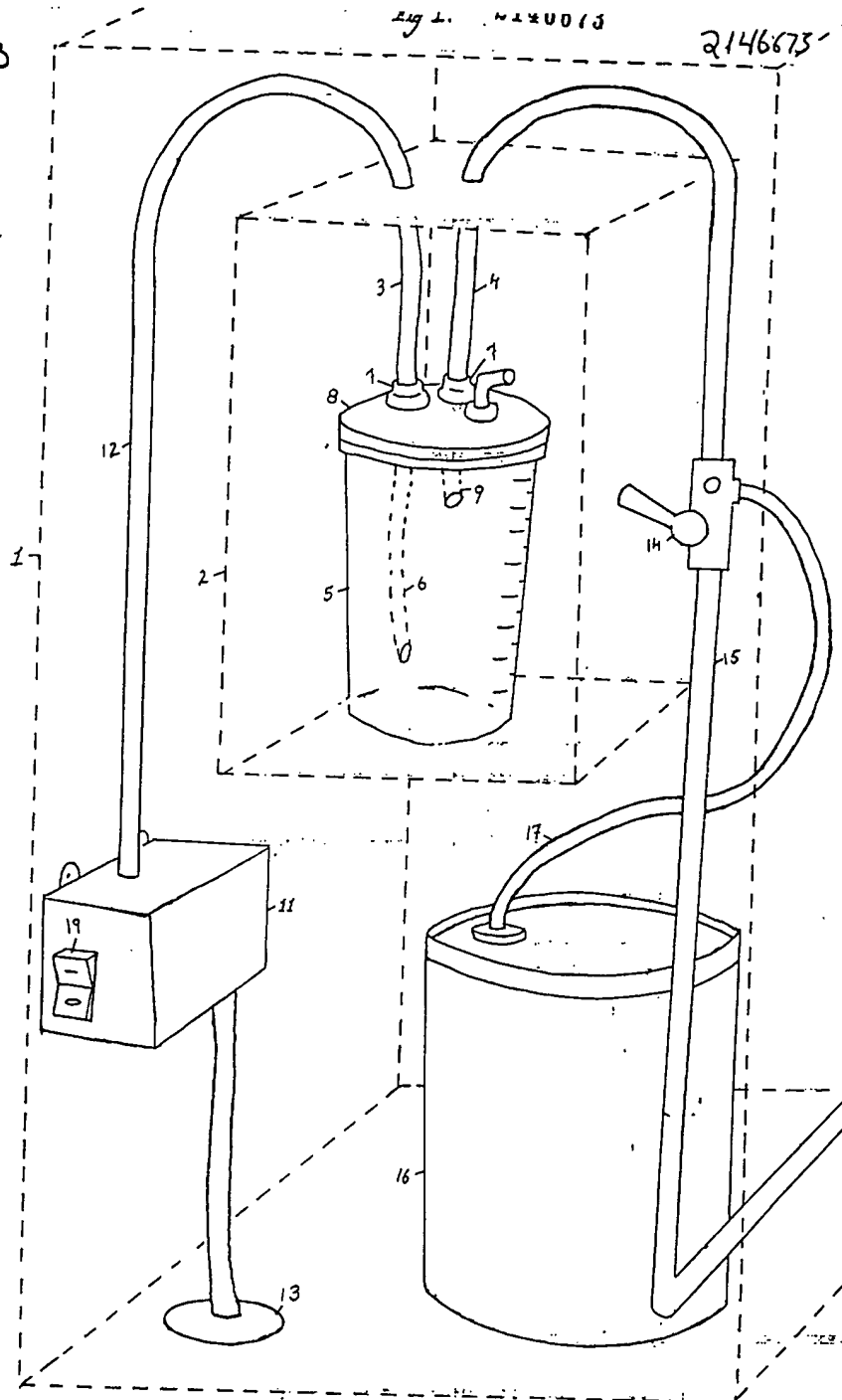
This invention is intended to be permanently located in a space where there will be a dedicated sewage drain, water line and power outlet. Presumably, this location will be within a Central Processing Department of the hospital or institution concerned. Suction bottles/canisters of a variety of types and makes can be drained and flushed with this apparatus. As this apparatus is concerned with worker safety, however, suction bottles/canisters used in any hospital should be constructed of shatterproof material, to prevent breakage in the course handling or transportation.

2
of

2146673

Fig. 1. 2146673

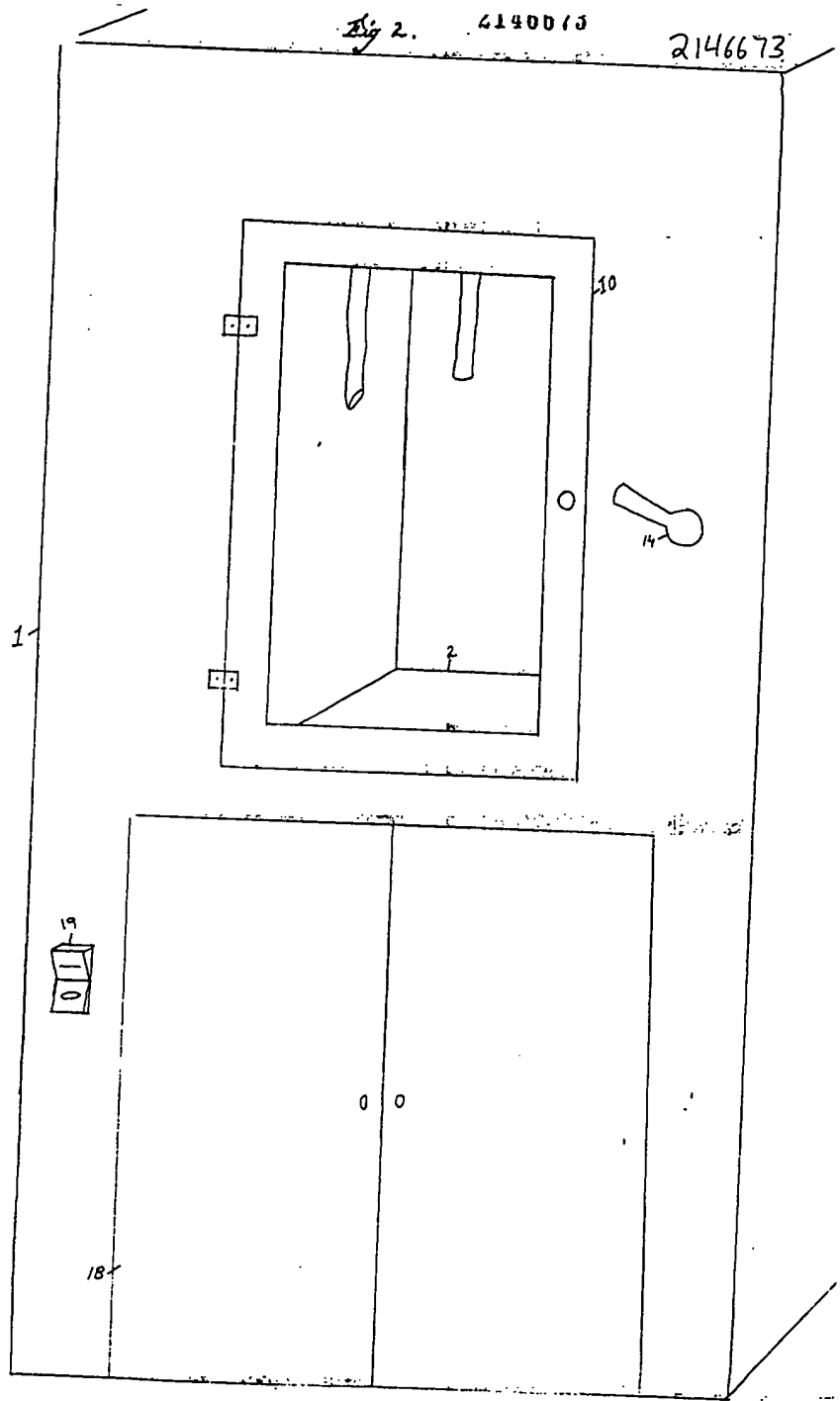
2146673



2146673

Fig. 2. 2140073

2146673



**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☒ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.